

What is Claimed:

1. Apparatus for producing fatty acid methyl ester, comprising:
 5 at least one container for fats;
 a tank for alkaline solution;
 a tank for alcohol;
 a mixing vessel for compounding the alkaline solution and the alcohol;
 a reaction section connected to the at least one container and the mixing vessel; and
 10 a separation unit downstream from the reaction section.
2. The apparatus of claim 1, wherein the reaction section comprises a static mixer.
3. The apparatus of claim 2, wherein the static mixer comprises a pipe.
4. The apparatus of claim 3, wherein the pipe is filled with balls of various sizes.
5. The apparatus of claim 3, wherein the pipe comprises at least one of a baffle, a
 15 propeller, and a resistor.
6. The apparatus of claim 1, wherein the reaction section comprises a dynamic emulsifier.
7. The apparatus of claim 1, wherein the reaction section comprises a crack emulsifier.
8. The apparatus of claim 1, wherein the reaction section comprises a turbulator.
9. The apparatus of claim 1, wherein the reaction section comprises a mixed form
 20 of crack emulsifier and turbulator.
10. The apparatus of claim 1, wherein the mixed form of crack emulsifier and turbulator comprises two discs capable of moving in relation to one another to introduce
 25 emulsion in the middle of one of the discs.
11. The apparatus of claim 1, wherein the reaction section comprises a cavitation emulsifier.
12. The apparatus of claim 1, wherein the reaction section comprises an ultrasound device.
13. The apparatus of claim 1, wherein the separation unit comprises a filtration unit.
14. The apparatus of claim 13, wherein the filtration unit comprises a surface filter

comprising a membrane.

15. The apparatus of claim 14, wherein the surface filter comprises a porous carrier and a layer applied to the porous carrier, which layer acts as a membrane.

16. The apparatus of claim 15, wherein the porous carrier comprises a pipe.

17. The apparatus of claim 15, wherein the porous carrier comprises one of
5 aluminum oxide, porous glass, and silicate.

18. The apparatus of claim 15, wherein the layer acting as a membrane has at least one of lipophilic, hydrophilic, and amphoteric properties.

19. The apparatus of claim 15, wherein the layer acting as a membrane comprises a ceramic membrane.

10 20. The apparatus of claim 19, wherein the ceramic membrane comprises one of titanium dioxide and zirconium dioxide.

21. The apparatus of claim 15, wherein the layer acting as a membrane has a pore size which is at least one of a nano pore size and a micro pore size.

22. The apparatus of claim 21, wherein the pore size is 5-200 nm.

15 23. The apparatus of claim 13, wherein the filtration unit comprises one of a molecular sieve filter and a molecular sieve membrane.

24. The apparatus of claim 13, wherein the filtration unit comprises a multiphase filter.

20 25. The apparatus of claim 1, wherein the separation unit comprises a distillation unit comprising at least one evaporator and at least one condenser.

26. The apparatus of claim 1, further comprising a distillation unit comprising at least one evaporator and at least one condenser downstream from the separation unit.

27. The apparatus of claim 1, further comprising a down-flow evaporator.

28. The apparatus of claim 1, further comprising a thin-layer evaporator.

25 29. The apparatus of claim 1, further comprising a rotation flow evaporator.

30. The apparatus of claim 1, further comprising a distillation unit which is upstream of the separation unit.

31. The apparatus of claim 1, further comprising an additional separation unit downstream from the separation unit.

30 32. The apparatus of claim 1, wherein the separation unit is connected to the reaction section by a connecting pipe from the at least one container for the fats.

